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FILING DATE: April 11, 2003

RELATED PCT APPLICATION NUMBER: PCT/US04/11653

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04/11/03  
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04-14-03  
PROVISIONAL APPLICATION FOR PATENT 60/462280-041103

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(b)(2).

Express Mail No.: EV 164033260 US

Mailing Date: April 11, 2003

JC879 U.S. PTO  
60/462280

Docket No. 13770US01		Type a plus (+) inside this box	
INVENTOR(s)/APPLICANT(s)			
LAST NAME	FIRST NAME	MIDDLE INITIAL	RESIDENCE (CITY AND EITHER STATE OR FOREIGN COUNTRY)
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TITLE OF THE INVENTION (280 CHARACTERS MAX)			
COVER ASSEMBLIES FOR IN-FLOOR FITTINGS			
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ENCLOSED APPLICATION PARTS (check all that apply)			
<input checked="" type="checkbox"/>	Specification	Number of Pages	7
<input checked="" type="checkbox"/>	Drawings	Number of Sheets	21
<input type="checkbox"/>	Small Entity Statement		
<input type="checkbox"/>	Other (Specify) _____		
METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT (check one)			
<input checked="" type="checkbox"/>	A check or money order is enclosed to cover the filing fees.		FILING FEE AMOUNT (\$)
<input checked="" type="checkbox"/>	The Commissioner is hereby authorized to charge filing fees and credit Deposit Account Number 13-0017.		\$160.00

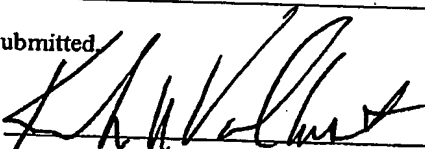
The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.

☒ No.

☐ Yes, the name of the U.S. Government agency and the Government contract number are: \_\_\_\_\_

Respectfully submitted,

SIGNATURE



DATE

April 11, 2003

TYPED or PRINTED NAME Kirk A. Vander Leest

REGISTRATION NO.

34,036

☐

Additional inventors are being named on separately numbered sheets attached hereto.

USE ONLY FOR A PROVISIONAL APPLICATION FOR PATENT

Attorney Docket No. 13770US01

TITLE

COVER ASSEMBLIES FOR IN-FLOOR FITTINGS

BACKGROUND OF THE INVENTION

[01] Walker Systems, Inc., the assignee of this application, currently offers brass and polycarbonate covers for use with their preset, floorbox, and plastic floorbox product lines. Figure 1 illustrates an example of a typical cover on a plastic floorbox.

[02] Similar covers are available from third parties including Hubbell, Thomas and Bettis, Carlon. In addition to brass and polycarbonate, these companies also offer covers formed from aluminum covers. Initially we decided upon producing copies of our brass lines in aluminum but since then have decided to improve upon our competitors' and our offerings.

BRIEF DESCRIPTION OF SEVERAL VIEWS OF THE DRAWINGS

[03] Figure 1 illustrates an example of a prior cover.

[04] Figures 2 through 11 illustrate certain aspects of a cover according to a first embodiment of the present invention.

[05] Figures 13 through 17 illustrate certain aspects of a cover according to a second embodiment of the present invention.

[06] Figures 18 through 25 illustrate certain aspects of a cover according to a third embodiment of the present invention.

[07] Figures 26 through 31 illustrate certain aspects of a cover according to a fourth embodiment of the present invention.

[08] The foregoing summary, as well as the following detailed description of certain embodiments of the present invention, will be better understood when read in conjunction with the appended drawings. For the purpose of illustrating the invention, there is shown

in the drawings, certain embodiments. It should be understood, however, that the present invention is not limited to the arrangements and instrumentalities shown in the attached drawings.

### DETAILED DESCRIPTION OF THE INVENTION

[09] Figures 2 through 11 illustrate certain aspects of a cover according to a first embodiment of the present invention. The first embodiment includes a pair of flip doors that are pivotally connected to the main body of the cover. In use, the cover mounts on top of an in-floor fitting such as a preset, afterset or floorbox. The doors can be pivoted between a closed position at which they overlie a receptacle (such as a power receptacle) that is mounted in the fitting and an open position at which at least a portion of the receptacle is exposed and accessible. The point of rotation is located such that the door (8) opens parallel to the long side of the cover (parallel to the receptacle, Figures 4 and 5, Part 5). This allows for an open system to be designed so that duplex, GFI, and Twist-Lock receptacles can be used in the same cover along with communications brackets and modules.

[10] A locking screw (7) (Figure 6) is used to hold down both doors (8) at the same time. Prior cover designs typically use individual locking screws for each door. The head of screw (7) has a rounded edge or portion and a squared-off edge or portion. When the rounded portion is aligned with the door (as shown in Figure 6), the head overlies the door and prevents it from pivoting upwardly towards its open position. To open the door, the screw is rotated 180 degrees such that the squared-off edge is adjacent to the door. In this position, the door can be moved between its closed and open positions.

[11] Alternatively, as is shown in Figure 7, three locking screws (7) can be used where each one locks the flip over door (8) in both the open and closed positions. In Figure 7 the left door locked open and the right door locked closed. The center locking screw in Figure 7 has the same general construction as the screw 7 of Figure 6. The outer screws have an alternative construction where the screw head includes a top that can be moved between a first or blocking position, at which the tab overlies the door opening in the

main body (5) and a second position at which the tab does not overlie the door opening. It will be appreciated that numerous other means may be used to restrict movement of the doors. For example, the bottom member could incorporate integral locking fingers.

[12] This cover has been designed to pass the scrub water requirements set forth by Underwriters Laboratories. With reference to Figures 8-10, a series of four gaskets are provided to seal against moisture infiltration through the cover and into the fitting. Each door (8) has a gasket (6) placed on the inside edge (Figure 8) to seal out water from the gap between the doors. As the doors are closed, these gaskets will interfere (compress) with each other to cause a water-tight seal. A third gasket (3) is placed between the cover (5) and the flange (1) (See Figure 9). This is placed on the flange prior to the cover being placed and screwed into location. There will be two or three different gasket styles provided with each cover to properly seal and protect the receptacle and wires from water. An example of this gasket is shown below. A fourth gasket (4) is disposed on the bottom of the flange (1) to protect from water leaking underneath the flange and into the box where the electrical and data cables are stored (see Figure 10).

[13] The door (8) rotates relative to the main body (5) about a hinge pin (9) that is pressed into place on the main body (5) of the cover. The hinge passes through a clearance hole on the flip door (8) and is free to rotate in this region (Figure 12).

[14] The first embodiment offers several unique features that are not currently offered on the market. First, it is a complete flip over door that is protected by a flange. This prevents the doors from being accidentally kicked off. Second, it is a "open" system which allows the cover to be used with a wide variety of receptacles and communications modules. Next, it is the only all aluminum "flush" cover that would be available at this current time. Finally, it has clearance to allow for plugs of many sizes to full seat with the face of the receptacle making end use safer and more reliable.

[15] Preferably, the cover is constructed from aluminum. Alternatively it could be constructed from any other type of metal or plastic. The cover has been illustrated with a

duplex power receptacle. However, it will be appreciated that the cover can be used with a variety of power and communication receptacles.

[16] Figures 13-17 illustrate certain aspects of a cover according to a second embodiment of the present invention. The second embodiment utilizes a plurality of doors that are slidably connected to the main body of the cover. Each door slides between an inner, closed position and an outer, open position. When a door is at its closed position, it overlies and protects at least a portion of a receptacle carried by the fitting. The door can be slid to its open position to expose at least a portion of the receptacle. Locking screws (7) are placed at the edges of the cover (5) so that the door can be locked and prevented from movement in both the open and closed positions to prevent harm to cords, receptacles. One difference between this slide door and the doors used prior covers is that the plug is not pushed through the door to the receptacle. Instead, the door moves completely out of the way of the receptacle and allows for the plug to fully seat on the face of the receptacle. This allows us to use either metal or plastic on the top half of the slide door cover. This design also allows the cover to be used with a wide variety of receptacle designs.

[17] The cover includes locking screws 7 similar to those described above in connection with the first embodiment. The doors cannot be moved as long as the locking screws (7) are in their closed positions, i.e., with the rounded portion of the screw head facing towards the inside of the cover (see Figure 13). In order to open the door, the screw is rotated 180 degrees to allow the door to slide within the main body (5). Once the door is in its open position (Figure 15), the locking screw can then be rotated another 180 degrees and lock the cover in the closed position (Figure 15). Although it still may be possible to accidentally kick the cover shut, it would take a much larger force to do so.

[18] Figure 17 shows the exploded view of the slide door assembly. The door includes a plastic bottom piece (10) and a metallic (aluminum) top insert (11). The plastic bottom (10) insulates the receptacle from the metallic top piece (11). This construction also helps the door to slide because there is less friction between plastic and metal rather than

an all metal design. This construction prolongs the finish of the cover. Alternatively, the door could be a single piece formed from plastic, for example.

[19] A gasket (6) is placed on the inside edge of the bottom piece (10) to seal water out from the internal workings of the cover. A variety of methods can be used to affix the gasket to the edge of the door. One method is an adhesive backing (as shown in Figure 17). Another method is cold molding the gasket onto the plastic prior to affixing the top insert (11) to the plastic bottom piece (10). A third method is to compression fit the gasket between the plastic bottom piece (10) and the metal top insert (11) of the slide door. This method would provide a longer lasting, easier to assemble gasket.

[20] The gaskets for the body and the flange of this embodiment would be similar to the gaskets described above in connection with the first embodiment.

[21] Figures 18 through 25 illustrate a cover according to a third embodiment of the present invention. Like the locking screw slide door embodiment, the door can be made of multiple pieces (Figure 19). In this embodiment, a button (13) is used in conjunction with a spring (12) that is laminated between a top (metal or plastic, 10) and bottom (plastic, 10) piece. When assembled the spring (12) interface with cutouts formed on the inside of the main cover body (5). When the button (13) is pulled in a direction away from the center of the door (Figures 20 and 21, Part 5), the spring is given clearance (Figure 25) to compress as the individual opening the door pulls the cover away from the center of the assembly. The sealing of this assembly is similar to the previous assemblies and, hence, details are not shown below.

[22] In this embodiment, the button must be pulled to allow the doors to open. This reduces the potential for tripping on the cover and also protect the internal components from dirt and other foreign substances.

[23] Figures 26 through 31 illustrate a fourth embodiment of the present invention. This embodiment is similar to the second and third embodiments in that it employs slide doors with spring stop for closed and open positions. A primary difference between this embodiment and the second and third embodiments is that no spring or button is used.

Rather, for each door, a ball plunger (14) is mounted in the main body cover (5). Each door has reciprocal recesses (not shown) that align with the ball plunger when the door is in its open and closed positions. The ball moves into these recesses to releasably lock the door in its open and closed positions. Alternatively, each door could be provided with multiple plungers. For example, plungers could be placed on opposite sides of the doors. This interference will cause the door to stop in that position similar to the spring and button concept. Also, all gaskets would be similar to those already described in previous concepts.

[24] To further understand the operation of the ball plunger, reference is directed to Figure 28 and 29. The ball is held within a metal or plastic sleeve with a spring. The ball itself can be made of either plastic or metal as well. As the ball is pushed down, the spring resists (Figure 29) causing the necessary force to lock the plunger into place when the ball enters a specified detent (stop) region. The spring can be made specific to the desired force for any application. For example, in one presently contemplated application, the force is set in a range, say 4 to 7 pounds of force, so that a person can pull the door open with no special tools or assistance.

[25] Also, some ball plungers are designed to be screwed into place. This is done by the sleeve being threaded like a screw on the outside and a slot cut across the top of the sleeve. As the ball is pushed down with the screwdriver, the slot can be utilized and the plunger put into place similar to if you were screwing a standard screw into a threaded hole.

[26] The plunger is press fit into the main cover body (5). The clearance hole (12) is made so that upon assembly the plunger cannot move without the cover being disassembled and force applied from the bottom of the plunger.

[27] The slide door is constructed in a similar manner to the door described in the second embodiment. One difference is shown in Figure 31. The bottom side of the plastic piece (8) used in the slide door assembly has cutouts placed to provide as positive

stop for the open and closed positions of the door rather than clearance on the top for the locking screw. Below is a bottom view of the plastic base of the slide door.

[28] The sealing of this assembly is accomplished in the same method as described in the second embodiment. The primary difference between the two designs is visual impact to the end user and assembly cost.

[29] While the invention has been described with reference to certain preferred embodiments, it will be understood by those skilled in the art that various changes may be made and equivalents may be substituted without departing from the scope of the invention. In addition, many modifications may be made to adapt a particular situation or material to the teachings of the invention without departing from its scope. For example, the covers have been described as being constructed from certain presently preferred materials. It will be appreciated, however, that a wide variety of materials (including a variety of metals and plastics) may be used to construct the various components of the covers.

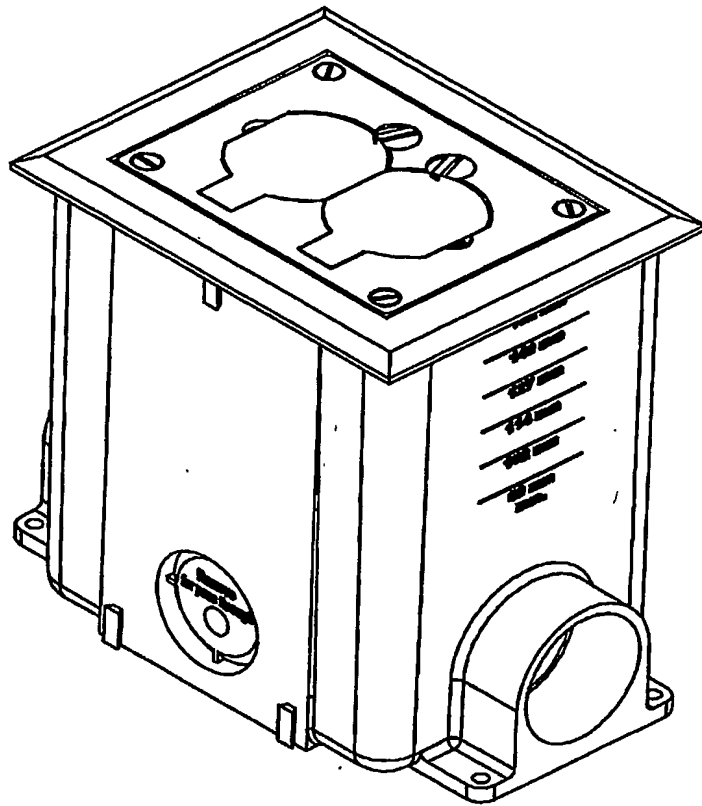


Figure 1

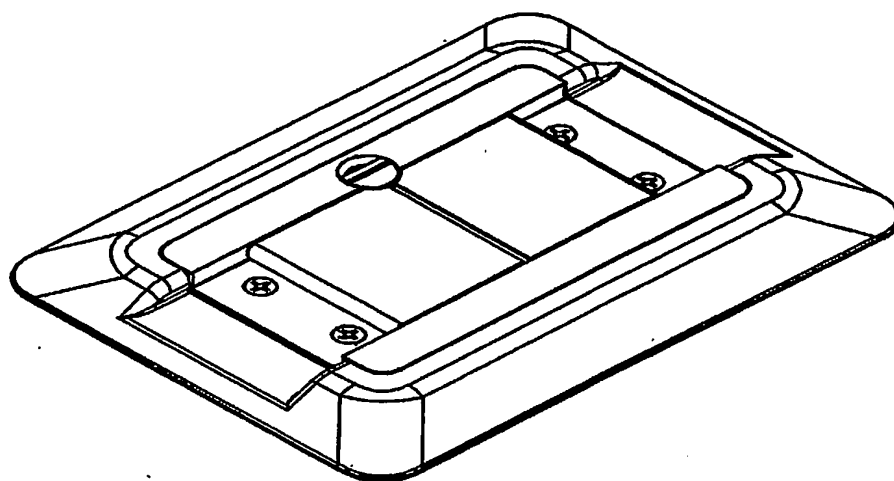


Figure 2

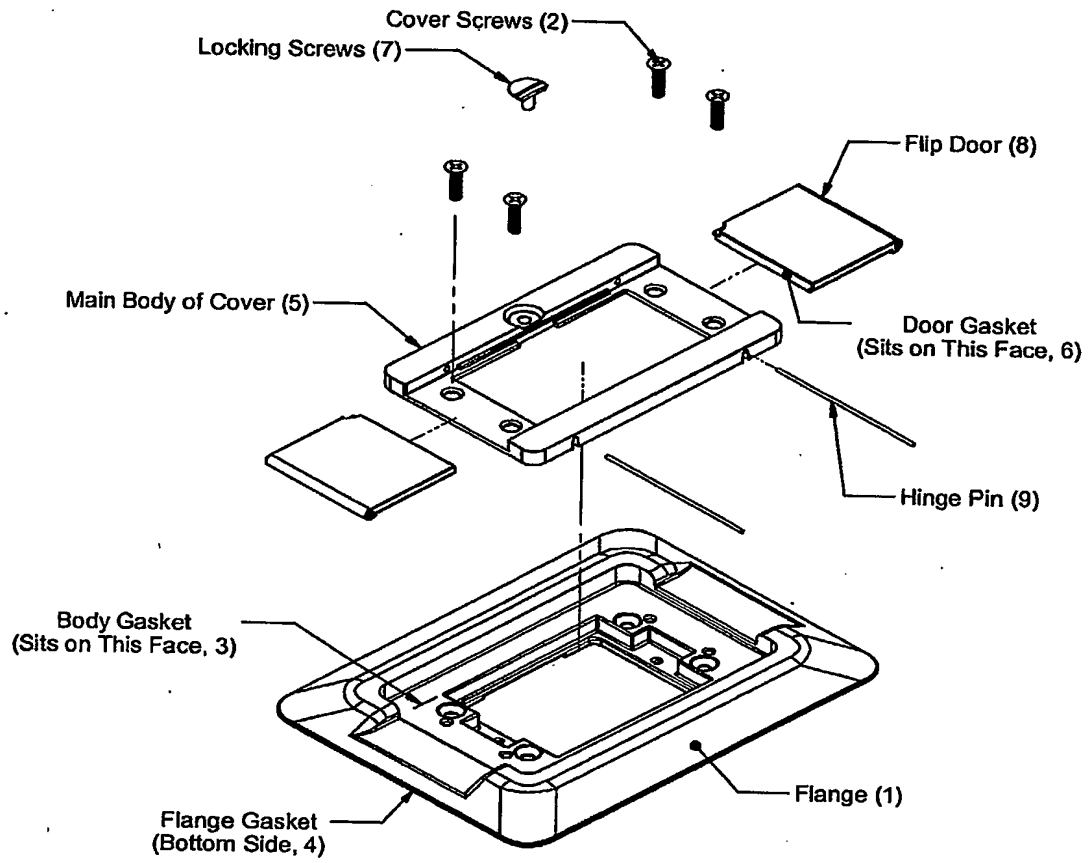


Figure 3

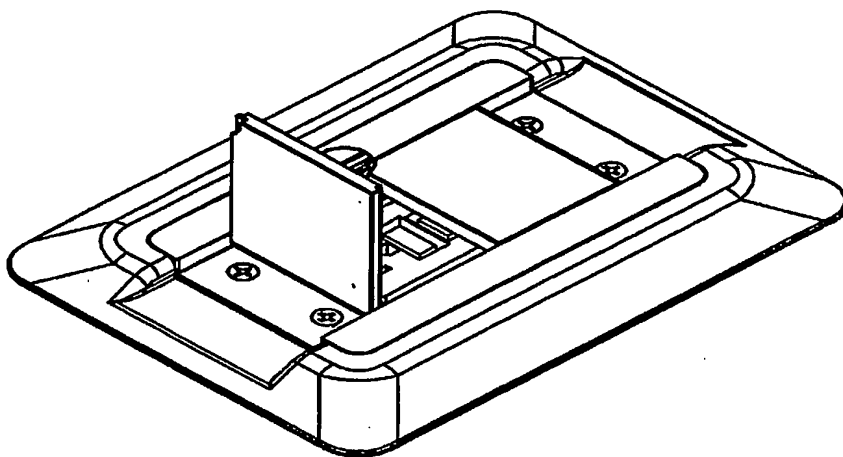


Figure 4

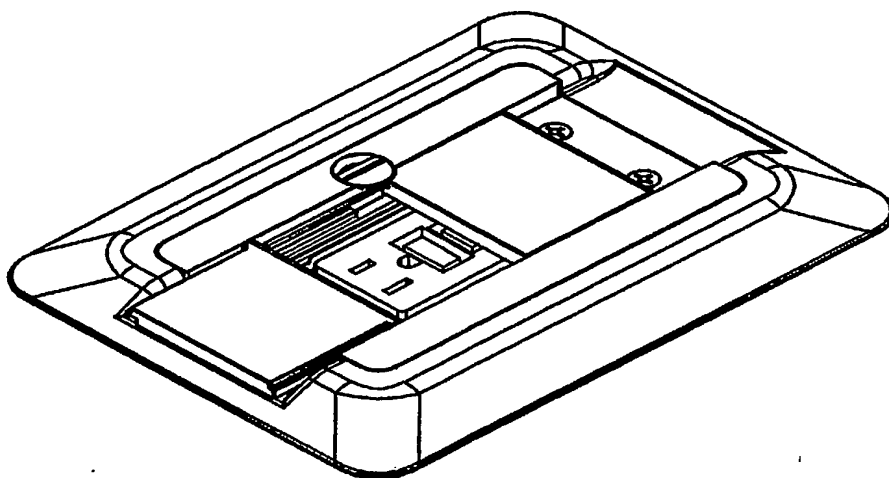


Figure 5

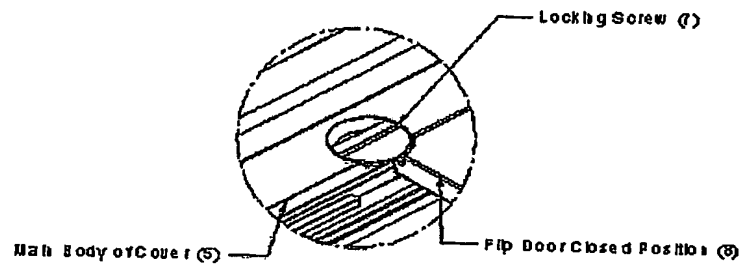


Figure 6

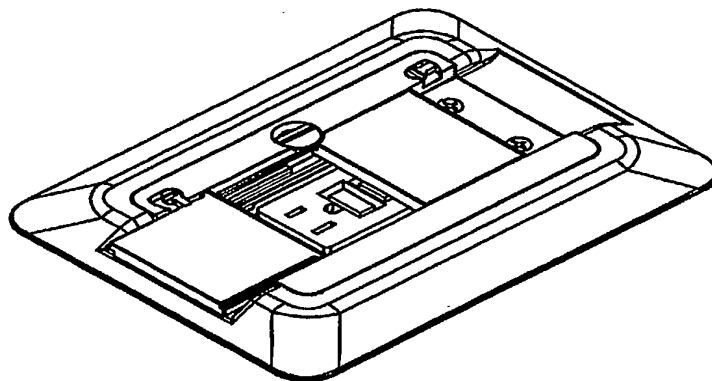


Figure 7

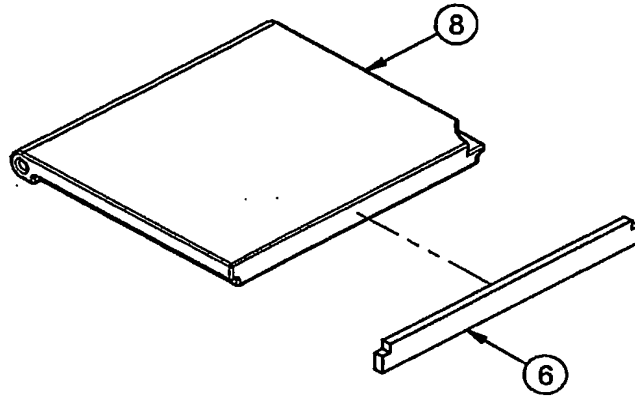


Figure 8

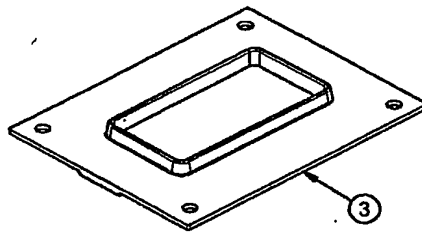


Figure 9

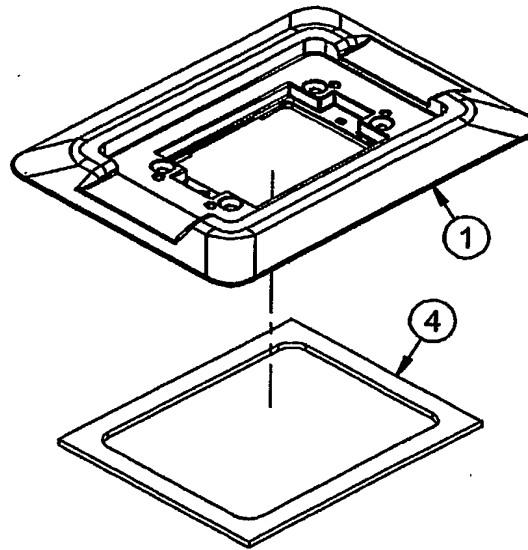


Figure 10

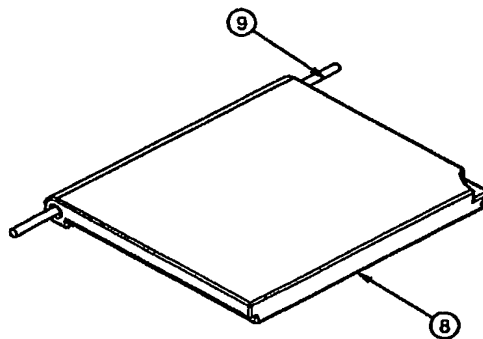


Figure 11

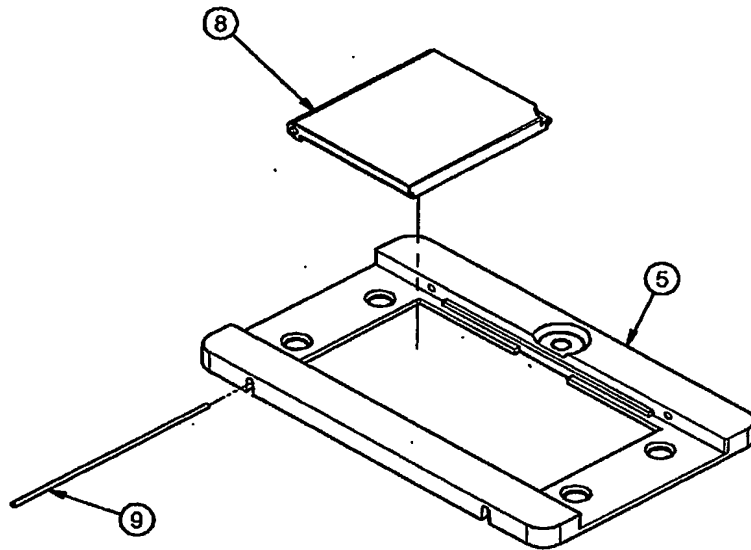


Figure 12

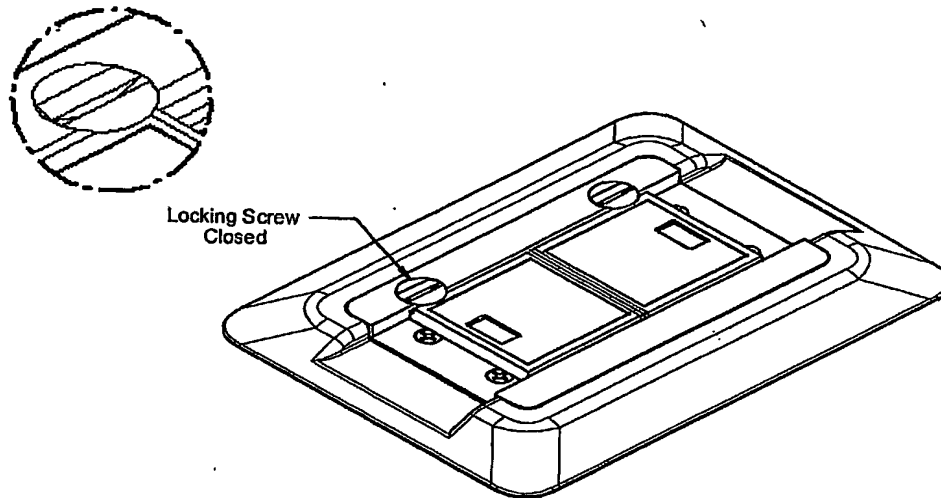


Figure 13

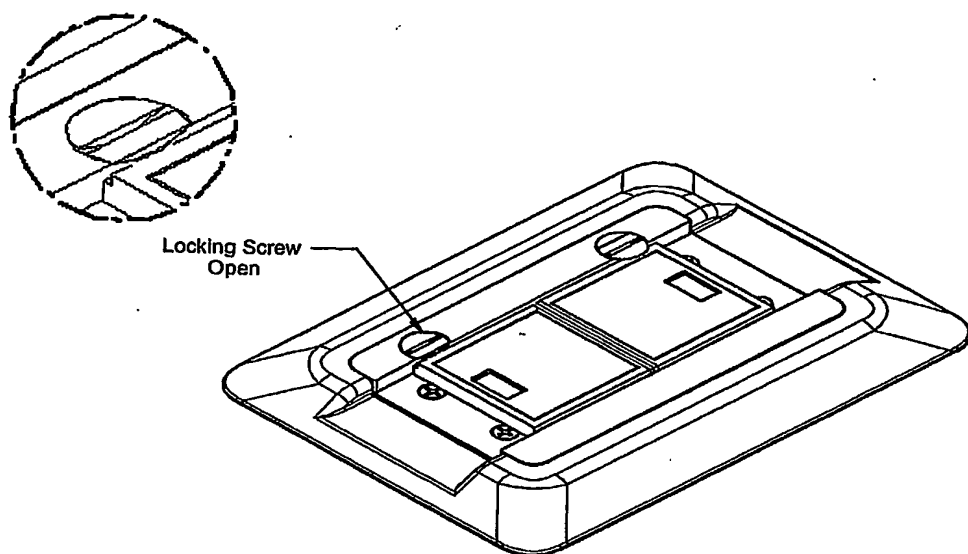


Figure 14

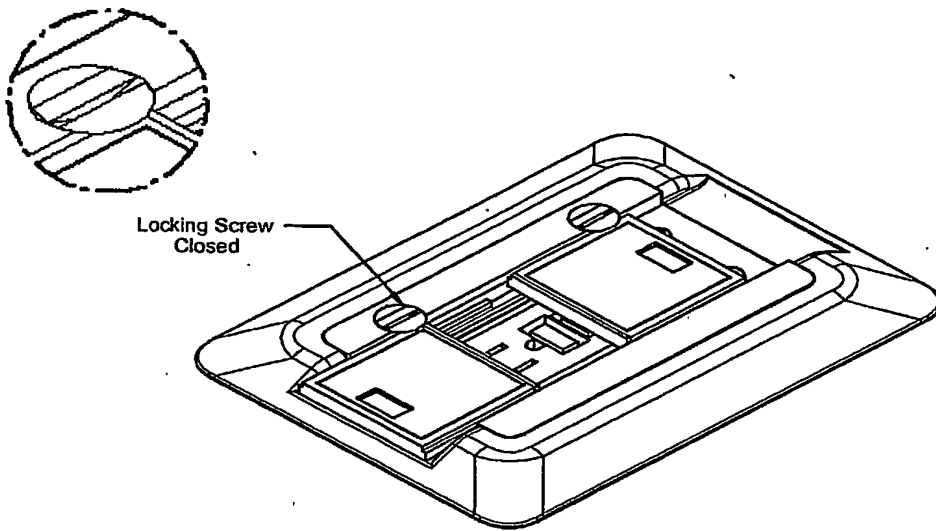


Figure 15

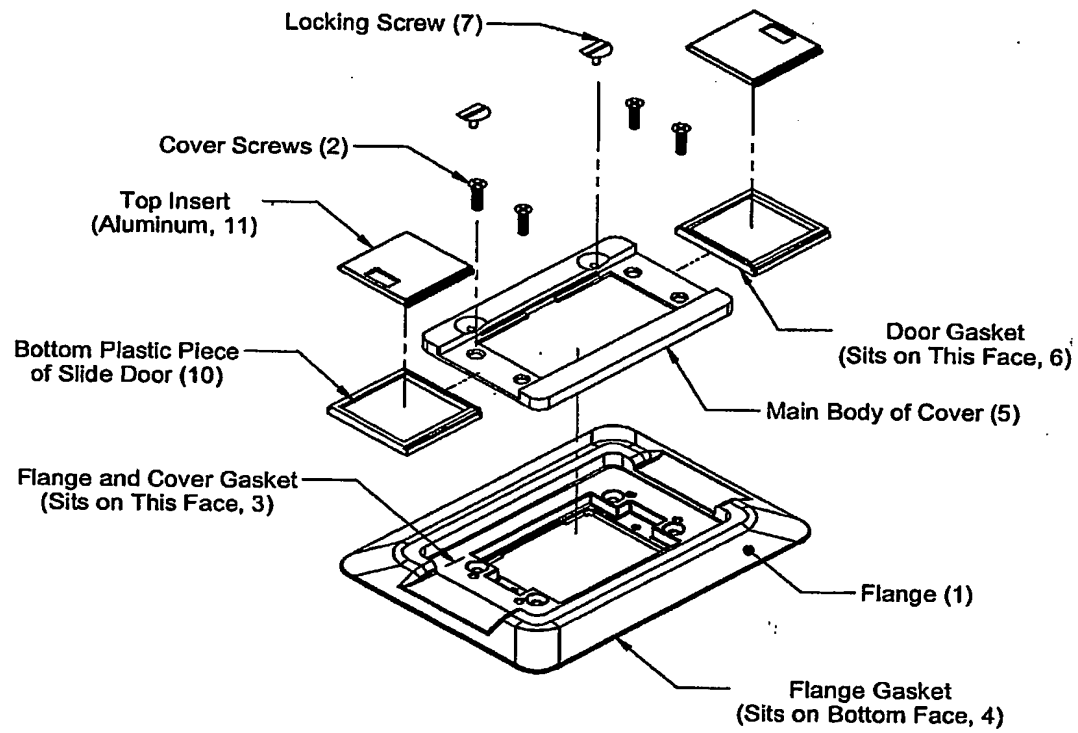


Figure 16

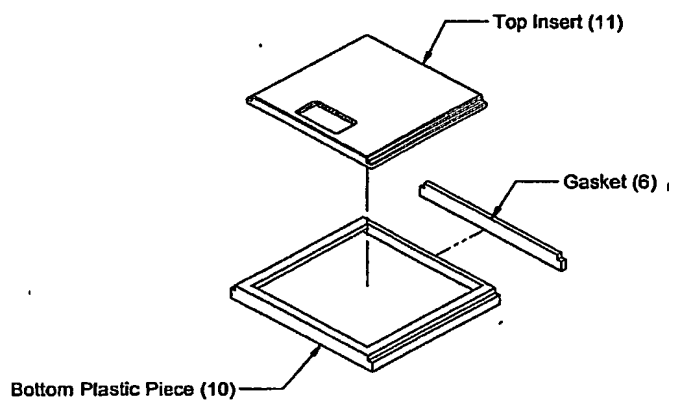


Figure 17

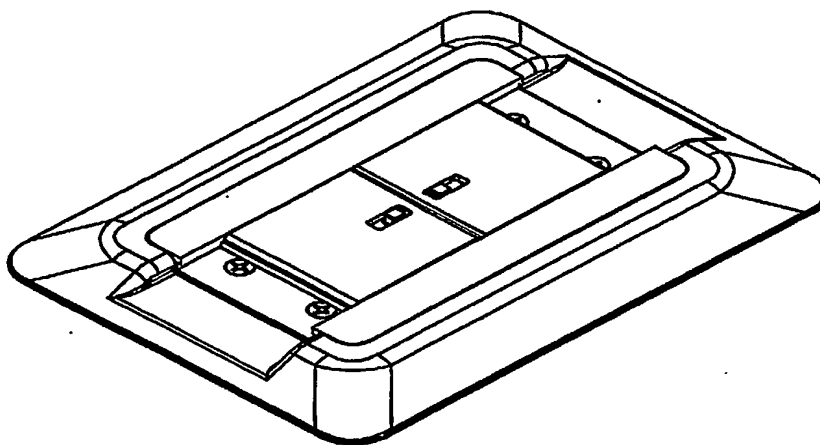


Figure 18

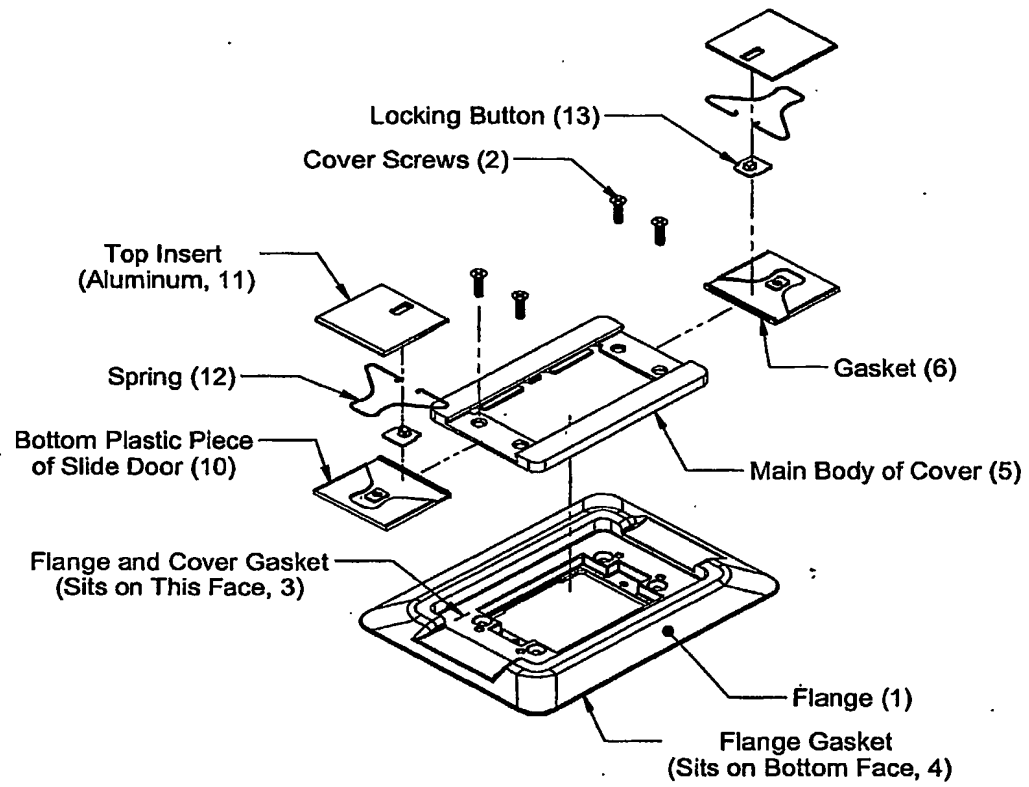


Figure 19

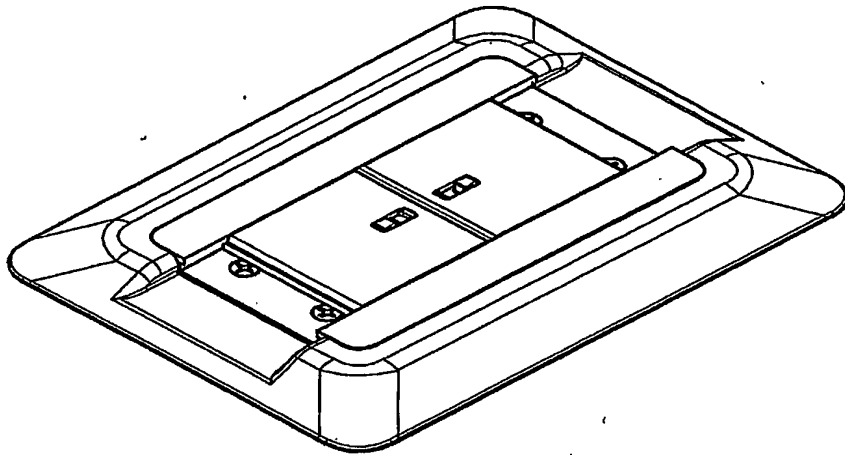


Figure 20

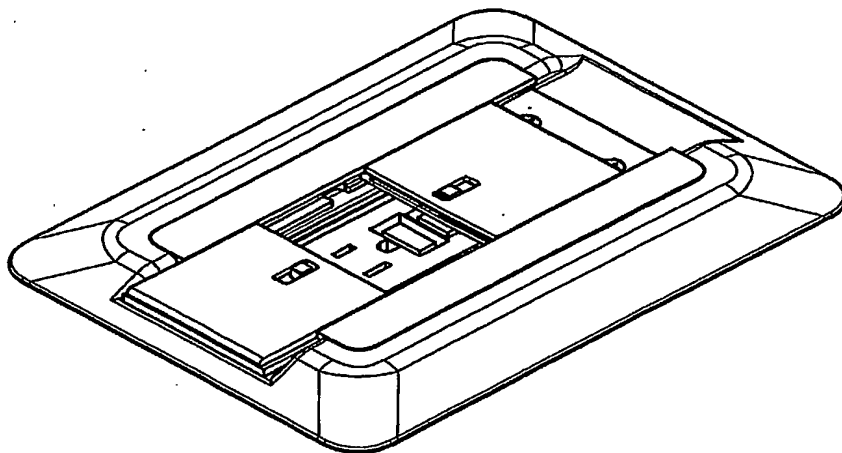


Figure 21

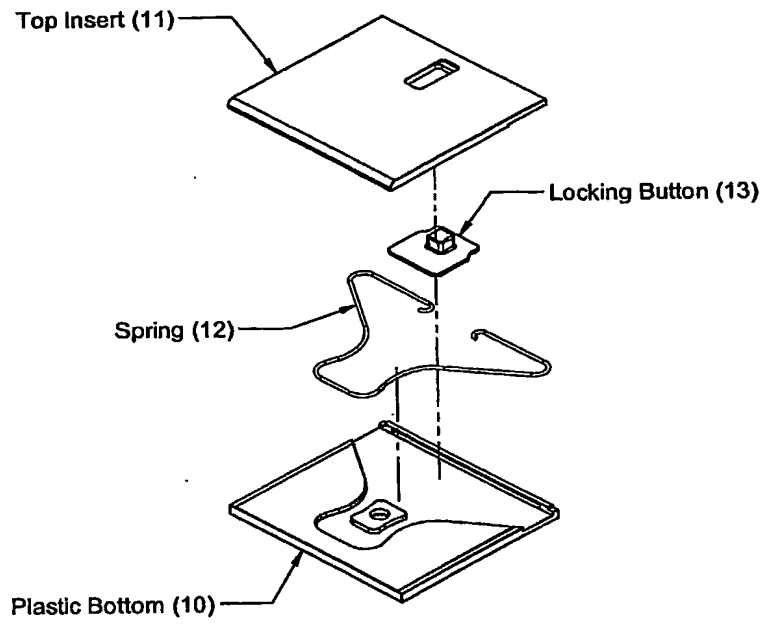


Figure 22

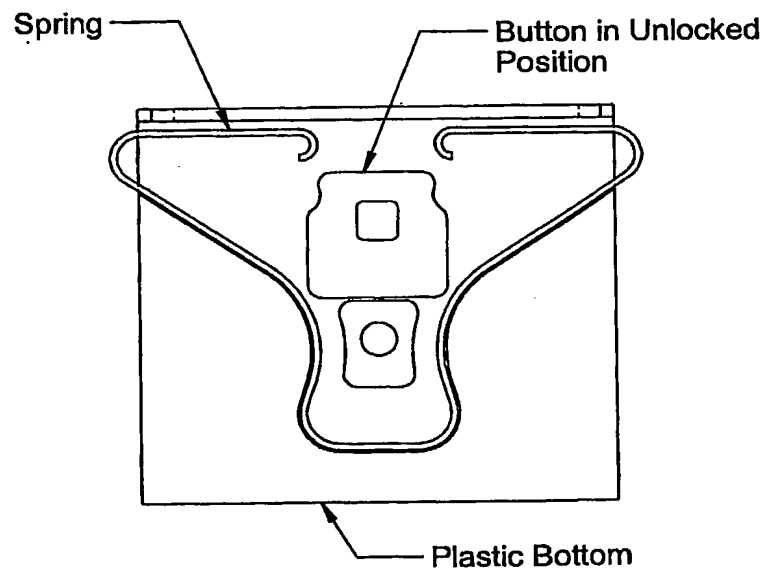


Figure 23

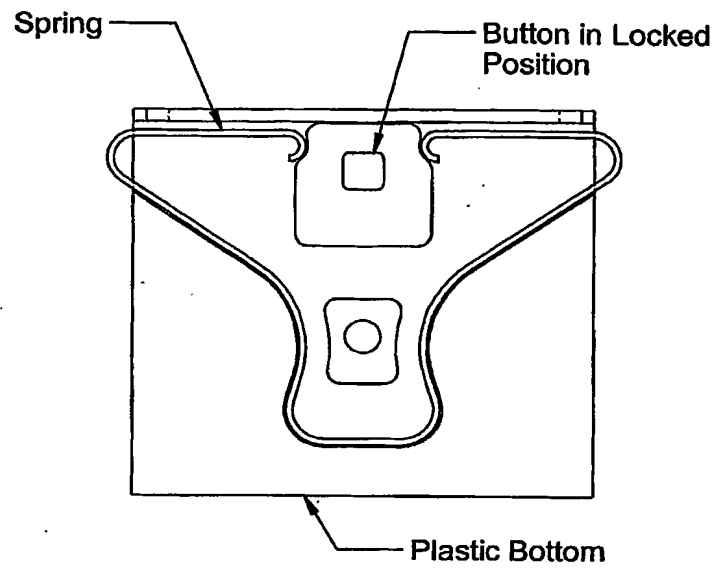


Figure 24

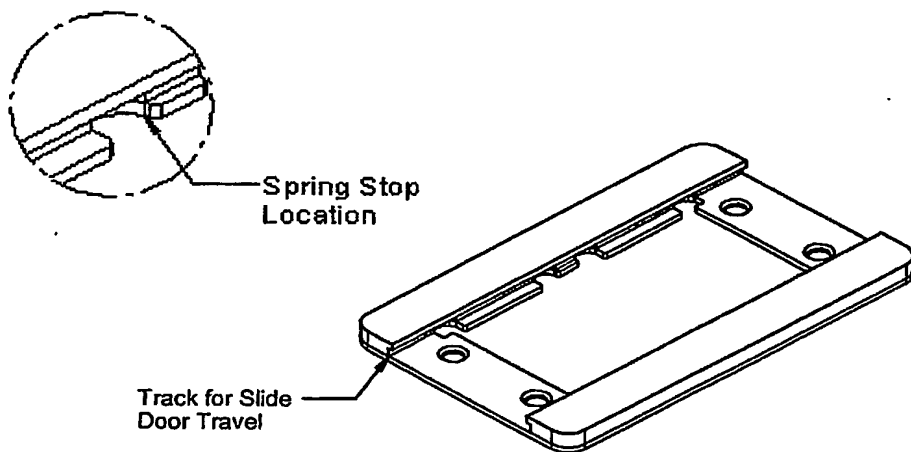


Figure 25

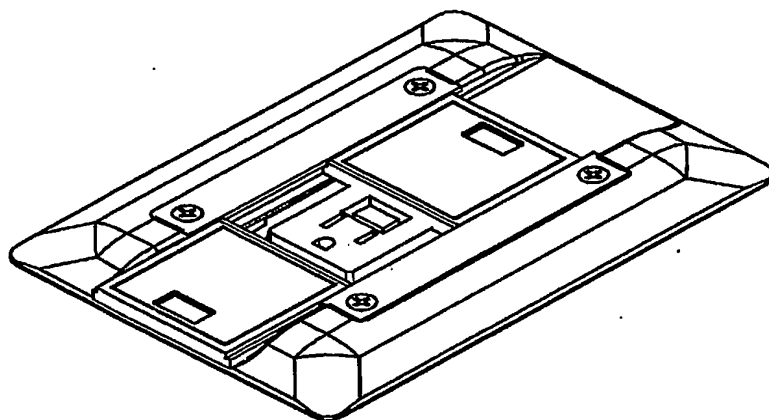


Figure 26

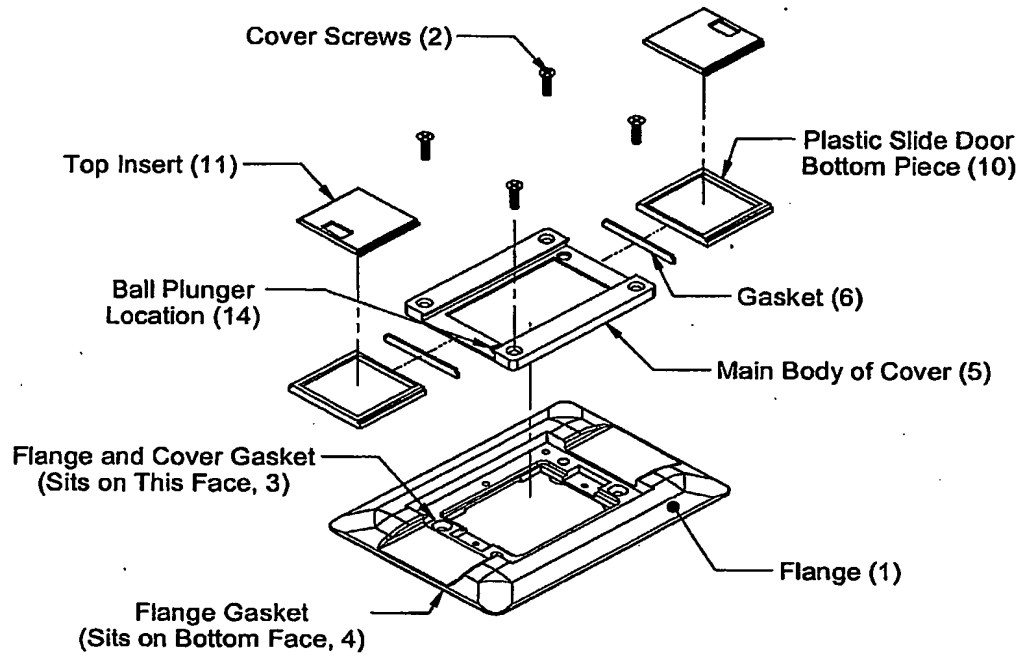


Figure 27



Figure 28

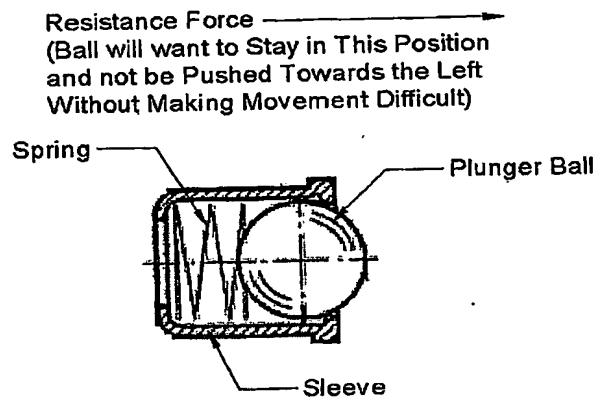


Figure 29

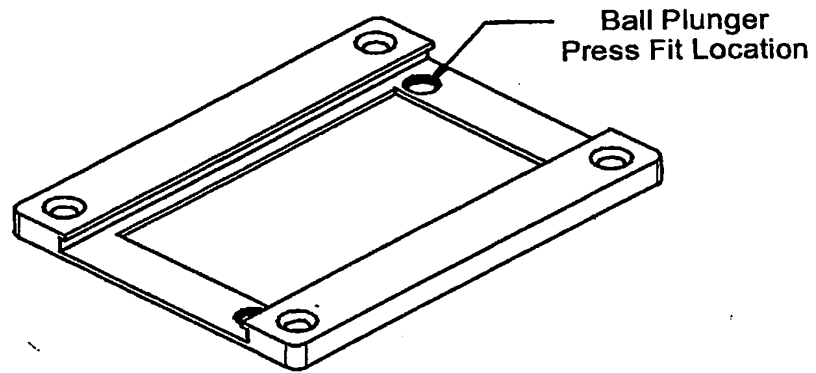


Figure 30

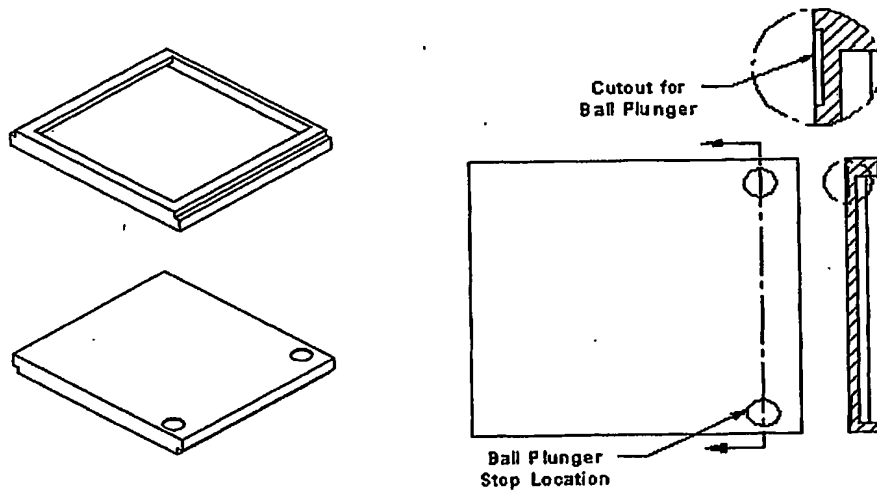


Figure 31

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